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mentary information regarding the prevalence of poliomyelitis in Japan:

Fukuoka Prefecture.—During the period from 1904 to 1913, 243 cases of poliomyelitis were admitted to the pediatric clinic of the Imperial University. Most of the cases were of children of from 1 year to 2 years of age. The disease prevailed most severely during the month of May.

Kagawa Prefecture.—In 1913 a small epidemic occurred, chiefly affecting children.

Kumamoto Prefecture.—An epidemic of poliomyelitis with 28 reported cases occurred in 1912, the greatest prevalence being in May and June.

Kyoto Prefecture.—Since the year 1911 poliomyelitis has prevailed sporadically but on a small scale and within a restricted area. The greatest prevalence has been observed in June and July. Children of from 1 year to 2 years have been found most susceptible to the infection.

Kyushu Prefecture.—No severe epidemic has been reported.

Niigata Prefecture.—From March, 1912, to the close of 1913, 22 cases of poliomyelitis were treated at the Niigata Medical College. Most of these cases were in children between the ages of 1 year and 2 years. The greatest prevalence was during the period from April to August.

Okayama Prefecture.—In 1912 an outbreak of poliomyelitis occurred, the period of prevalence being the months of May and June. More than 500 children were attacked and a comparatively large number of cases occurred among adults.

Tokyo.—During the past 26 years 449 cases of poliomyelitis have been diagnosed at the Imperial University. The disease prevailed most severely during the months of June, July, and August, and among children between 1 year and 2 years of age.

In July and August, 1916, five cases of poliomyelitis were notified in Japanese and foreign children at the summer resort of Karuizawa.

EXPERIMENTAL TYPHUS FEVER IN GUINEA PIGS.

A DESCRIPTION OF A SCROTAL LESION IN GUINEA PIGS INFECTED WITH MEXICAN TYPHUS.

By M. H. NEILL, Passed Assistant Surgeon, United States Public Health Service.

It is well known that the intraperitoneal inoculation of guinea pigs, with 2 to 4 cc. of blood containing the virus of typhus fever, is followed by a rather characteristic elevation of temperature which will be observed about 10 days subsequently. Not many descriptions of pathological changes as a result of the above procedure have

been reported. Baehr and his coworkers consider certain changes in the spleen, "which is enlarged and congested, with its malpighian bodies prominent,"¹ as typical of typhus fever in the guinea pig. Aside from the above, most workers seem rather to have insisted on the absence of gross lesions, due to the typhus virus, in these experimental animals.

The striking similarity, in many respects, of typhus fever and Rocky Mountain spotted fever, led to the examination of the scrotums of typhus-fever guinea pigs, since very definite lesions of the scrotal tissues are almost uniformly present in the former disease. These changes have been described by Ricketts² and other workers.

While the observations recorded in this paper have been in progress there has been ample opportunity for comparative study, as a strain of Rocky Mountain spotted fever has been carried on by transfer from guinea pig to guinea pig.

Lest there be any possibility of misunderstanding, it seems desirable to state that the nonidentity of the two diseases has apparently been thoroughly established by immunological studies.

The guinea pigs on which the observations were based were those inoculated with Mexican typhus directly from human cases or from other guinea pigs or monkeys in which the strains of Mexican typhus were being propagated. The observations were made during 1916 and 1917.

A series of guinea pigs infected with a strain of the so-called "endemic typhus" or Brill's disease, which had been propagated in monkeys and guinea pigs for several years, was examined before attention was focused on the scrotal lesions. While it is possible that a mild type of the lesion may have been present, it certainly was not sufficiently conspicuous to attract attention.

In well-developed male guinea pigs, which had been intraperitoneally injected with the Mexican typhus virus, the following changes have been observed: From 9 to 15 days after inoculation, the temperature of the animal becomes elevated to from 40.5° to 41° C., and if the scrotum, with the testicles in place, be examined, a definite swelling is observed. If the skin be of a light color, some redness may be noted. These external changes subside in a few days. If the animal be killed when the fever and scrotal changes are at their height, dissection reveals the following gross findings: The skin of the scrotum looks apparently normal, but if it be carefully dissected from the tissues immediately beneath, definite hemorrhages appear in the cremasteric fascia, just external to the parietal laminae of the tunica vaginalis. If these structures be incised and the testicle and epididymis exposed, hemorrhages of a similar nature will be noted

¹ Olitsky, Denzer and Husk, J. Am. M. Ass., 1917, vol. 68, No. 16, p. 1167.

² J. Am. M. Ass., 1906, 47, p. 33.

immediately beneath the visceral laminae of the tunica vaginalis. The extent of these hemorrhages varies, from a few minute petechiae to nearly complete envelopment of the testicles by hemorrhagic areas. If the animal be examined at the height of the process, i. e., one to two days after the swelling is first noted, the lesions above described are indistinguishable in their gross appearances from the lesions of Rocky Mountain spotted fever at the same stage of development of the disease, that is, one or two days after the swelling of the scrotum is first noted. In the spotted fever animals, in contradistinction to the typhus animals, the disease becomes progressively more severe. Hemorrhages into the skin of the scrotum take place, and in some cases typical necroses of the scrotum, paws, and ear tips are observed before the death of the animal, which usually follows. On the other hand, the lesions of typhus fever rapidly clear up and soon the animal is as well as ever.

Twenty-six out of 37 male guinea pigs killed at the height of the febrile reaction showed the lesions to be as described. These animals represent several strains of typhus received from El Paso, Tex., and Laredo, Tex., this year.

Lecount¹ and Wolbach² have emphasized the significance of vascular lesions in the pathology of Rocky Mountain spotted fever, both in human cases and in guinea pigs. These lesions consist of various grades of reaction to injury of the cells of the endothelium, i. e., endarteritis, and of rather peculiar and characteristic perivascular accumulations of cells.

E. Frankel,³ Aschoff,⁴ and Poindecker,⁵ and apparently several other workers whose publications are not now available, have described certain histological changes in typhus fever, especially as regards the exanthem. These writers all describe as characteristic, lesions of the smaller arteries consisting of necrosis of the intima and the perivascular accumulation of cells among which, as in spotted fever, the mononeuclear elements predominate.

In the present study the writer reports that: In guinea pigs infected with Rocky Mountain spotted fever and typhus fever, and killed at about the same stage of development of the lesions, sections of the testicles, epididymis, and their envelopes revealed similar changes. They were as follows:

A. Subperitoneal hemorrhages, presumably due to,

B. Vascular lesions, characterized by degeneration of the intima, proliferation of the endothelium and connective tissue of the vessel walls. Pronounced perivascular infiltration, as noted above, was

¹ Journal of Infectious Disease, 1911, vol. 8, p. 421.

² Journal Med. Research, 1916, vol. 34, p. 122.

³ Münch. Med. Wehnschr., 1914, vol. 61, p. 57.

⁴ Med. Klin, 1915, p. 798.

⁵ Münch. Med. Wehnschr., 1916, vol. 63, No. 5, p. 176.

found in both diseases. This consisted chiefly of cells of the lymphocyte series and of endothelial leucocytes. Polynuclear leucocytes were present, but distinctly in the minority. The changes were particularly abundant in the small vessels. Thromboses were occasionally observed in the early lesions.

The lesions in spotted fever showed more necrosis, exudation, and, in older specimens, more proliferation in the vessel walls than occurred in the typhus-fever animals.

Summary.

1. Definite, gross, and minute pathological changes in the genitals of male guinea pigs reacting to Mexican typhus-fever blood have been described. The gross lesions occurred in about 70 per cent of such animals examined.

2. These depend on lesions of the blood vessels.

3. The lesions are similar in process to, but milder in character than, those occurring in guinea pigs infected with Rocky Mountain spotted fever.